



Brachial plexus injury

Overview

The brachial plexus is the network of nerves that sends signals from your spinal cord to your shoulder, arm and hand. A brachial plexus injury occurs when these nerves are stretched, compressed, or in the most serious cases, ripped apart or torn away from the spinal cord.

Minor brachial plexus injuries, known as stingers or burners, are common in contact sports, such as football. Babies sometimes sustain brachial plexus injuries during birth. Other conditions, such as inflammation or tumors, may affect the brachial plexus.

The most severe brachial plexus injuries usually result from auto or motorcycle accidents. Severe brachial plexus injuries can leave your arm paralyzed, with a loss of function and sensation. Surgical procedures such as nerve grafts, nerve transfers or muscle transfers can help restore function.

Symptoms

Signs and symptoms of a brachial plexus injury can vary greatly, depending on the severity and location of your injury. Usually only one arm is affected.

Less severe injuries

Minor damage often occurs during contact sports, such as football or wrestling, when the brachial plexus nerves get stretched or compressed. These are called stingers or burners, and can produce the following symptoms:

- A feeling like an electric shock or a burning sensation shooting down your arm
- Numbness and weakness in your arm

These symptoms usually last only a few seconds or minutes, but in some people may linger for days or longer.

More-severe injuries

More-severe symptoms result from injuries that seriously injure or even tear or rupture the nerves. The most serious brachial plexus injury (avulsion) occurs when the nerve root is torn from the spinal cord.

Signs and symptoms of more-severe injuries can include:

- Weakness or inability to use certain muscles in your hand, arm or shoulder
- Complete lack of movement and feeling in your arm, including your shoulder and hand
- Severe pain

When to see a doctor

Brachial plexus injuries can cause permanent weakness or disability. Even if yours seems minor, you may need medical care. See your doctor if you have:

- Recurrent burners and stingers
- Weakness in your hand or arm
- Neck pain
- Symptoms in both arms

Causes

Damage to the upper nerves that make up the brachial plexus tends to occur when your shoulder is forced down while your neck stretches up and away from the injured shoulder. The lower nerves are more likely to be injured when your arm is forced above your head.

These injuries can occur in several ways, including:

- **Contact sports.** Many football players experience burners or stingers, which can occur when the nerves in the brachial plexus get stretched beyond their limit during collisions with other players.
- **Difficult births.** Newborns can sustain brachial plexus injuries. These may be associated with high birth weight, breech presentation or prolonged labor. If an infant's shoulders get wedged within the birth canal, there is an increased risk of a brachial plexus palsy. Most often, the upper nerves are injured, a condition called Erb's palsy.
- **Trauma.** Several types of trauma — including motor vehicle accidents, motorcycle accidents, falls or bullet wounds — can result in brachial plexus injuries.
- **Tumors and cancer treatments.** Tumors can grow in or along the brachial plexus, or put pressure on the brachial plexus or spread to the nerves. Radiation treatments to the chest may cause damage to the brachial plexus.

Risk factors

Participating in contact sports, particularly football and wrestling, or being involved in high-speed motor-vehicle accidents increases your risk of brachial plexus injury.

Complications

Given enough time, many brachial plexus injuries in both children and adults heal with little if any lasting damage. But some injuries can cause temporary or permanent problems, such as:

- **Stiff joints.** If you experience paralysis of your hand or arm, your joints can stiffen. This can make movement difficult, even if you eventually regain use of your limb. For that reason, your doctor is likely to recommend ongoing physical therapy during your recovery.
- **Pain.** This results from nerve damage and may become chronic.
- **Numbness.** If you lose feeling in your arm or hand, you run the risk of burning or injuring yourself without knowing it.
- **Muscle atrophy.** Nerves regrow (regenerate) slowly and can take several years to heal after injury. During that time, lack of use may cause the affected muscles to break down (degenerate).
- **Permanent disability.** How well you recover from a serious brachial plexus injury depends on a number of factors, including your age and the type, location and severity of the injury. Even with surgery, some people experience permanent muscle weakness or paralysis.

Prevention

Although damage to your brachial plexus often can't be prevented, you can take steps to reduce the risk of complications once an injury has occurred:

- **For yourself.** If you temporarily lose the use of your hand or arm, daily range-of-motion exercises and physical therapy can help prevent joint stiffness. Avoid burns or cuts, as you may not feel them if you're experiencing numbness. If you're an athlete who has experienced injuries to the brachial plexus area, your doctor may suggest you wear specific padding to protect the area during sports.
- **For your child.** If you're the parent of a child with brachial plexus palsy, it's important that you exercise your child's joints and functioning muscles every day, beginning when your baby is just a few weeks old. This helps prevent the joints from becoming permanently stiff and keeps your child's working muscles strong and healthy.

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